# *Introduction*

## Analysis Overview

Watershed analysis is ecosystem analysis at the watershed scale. It is both an analysis and an information gathering process. The purpose is to provide a means by which the watershed can be understood as an ecological system by analyzing and documenting the processes and interactions occurring within. This document, *The Horse Creek Ecosystem Analysis*, documents the ecosystem analysis of the Horse Creek watershed (see **Figure i-1** *Klamath Basin Vicinity and Horse Creek Watershed,* page intro-3).

The analysis focuses on the Issues and Key Questions specifically identified for this watershed. They are assessed in terms of their biological, physical, and social features. Types of information used in the analysis includes: beneficial water uses; vegetative patterns and distribution; disturbance factors; wildlife species and their habitats; human use patterns; and the importance of vegetative and riparian corridors. The analysis concludes with the identification of management opportunities that will provide the basis for the development of future projects.

In this way, the analysis process is used as a vehicle for implementation of Forest planning direction, as an intermediate process between land management planning and project planning. It is an analysis step and does not involve *National Environmental Policy Act* (*NEPA*) decisions. It provides a means of refining the *Forest Plan* to the the desired conditions of the watershed, given the Goals and Objectives, Management Areas and Standards and Guidelines from the Klamath National Forest Land and Resource Management Plan (*Forest Plan*), current policy, and other applicable State and Federal regulations.

The *Forest Plan* incorporates direction contained in the *Record of Decision* (*ROD*) and attached *Standards and Guidelines* for the *Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl* (*FSEIS*), also known as the *Northwest Forest Plan*.

Seven different Management Areas occur within the Horse Creek analysis area: Late-Successional Reserve (LSR), Special Interest Area, Riparian Reserve, Recreation River, Retention Visual Quality Objective (VQO), Partial Retention VQO, and General Forest. Although not Forest Plan Management Areas, Released Roadless Areas and Critical Habitat for the northern spotted owl outside of LSR are areas of special management consideration located within the analysis area.

## Process And Document Organization

The analysis was conducted by a core Forest Ecosystem Analysis Team (FEAT) and an expanded team of District resource specialists. During the analysis phase, participation and involvement of the Public and other Federal agencies was encouraged.

Six steps are utilized in conducting watershed analysis: Characterization, Issues and Key Questions, Current Conditions, Reference Conditions, Interpretation, and Recommendations. The six steps of the analysis process are documented in the six chapters of this ecosystem analysis. A summary of each chapter follows.

**CHAPTER 1 - CHARACTERIZATION**

The watershed is placed in context within the river basin, province, or a broader geographic area. The dominant physical, biological, and human dimension features, characteristics, and uses of the watershed are described.

**CHAPTER 2 - ISSUES AND KEY QUESTIONS**

The variety of uses and values associated with the watershed are identified. This step focuses the analysis on key elements of the ecosystem that are most relevant to the management issues, human values, or resource conditions within the watershed. Analysis questions are formulated and indicators used to measure or interpret these ecosystem elements are identified.

**CHAPTER 3 - CURRENT CONDITIONS**

The current range, distribution, and conditions of the relevant ecosystem elements are described.

**CHAPTER 4 - REFERENCE CONDITION**

Historic conditions are described and compared with current conditions. The development/ transition from these historic to current conditions as the result of human influence and natural disturbances is explained.

**CHAPTER 5 - INTERPRETATION**

The existing and historical or reference conditions of specific landscape elements are compared. Important differences, similarities or trends, and their causes are explained. Desired conditions for each issue are discussed.

**CHAPTER 6 - RECOMMENDATIONS**

Management activities that could move the ecosystem towards desired conditions are identified as Management Opportunities. What needs to be done and why are identified. This step ultimately provides the purpose and need for implementation of individual projects designed to achieve desired conditions.

**APPENDICES**

Appendices A through E are included in support of descriptions, discussions, and explanations contained within the analysis. As part of the process, feedback to the *Forest Plan*, e.g., changes in land allocations, refinements to existing data layers, etc., is documented, see **Appendix A** – *Forest Plan Feedback*, for details. The other appendices are referenced where appropriate throughout the document.

A - Forest Plan Feedback
B - Cummulative Watershed Effects
C - Aquatic Habitat
D - Fire and Fuels
E - Roads Analysis Process
F - Short-Term Timber Program Analysis

**MAP PACKET**

The final portion of this document is the Map Packet containing the majority of maps (Figures) referred to within the text of this analysis.

## Relationship to Other Analyses and Planning

As stated previously, ecosystem analysis occurs between the *Forest Plan* and project-level (NEPA) analyses. Project implementation requires subsequent analysis focused on site specific effects and public involvement before a decision is made.

The Horse Creek Ecosystem Analysis is one of many completed watershed analyses; see **Figure i-2** *Completed Ecosystem Analyses / Watershed Boundaries*, page intro-4, for a display of completed analyses on the Forest.

## Information And Data Sources

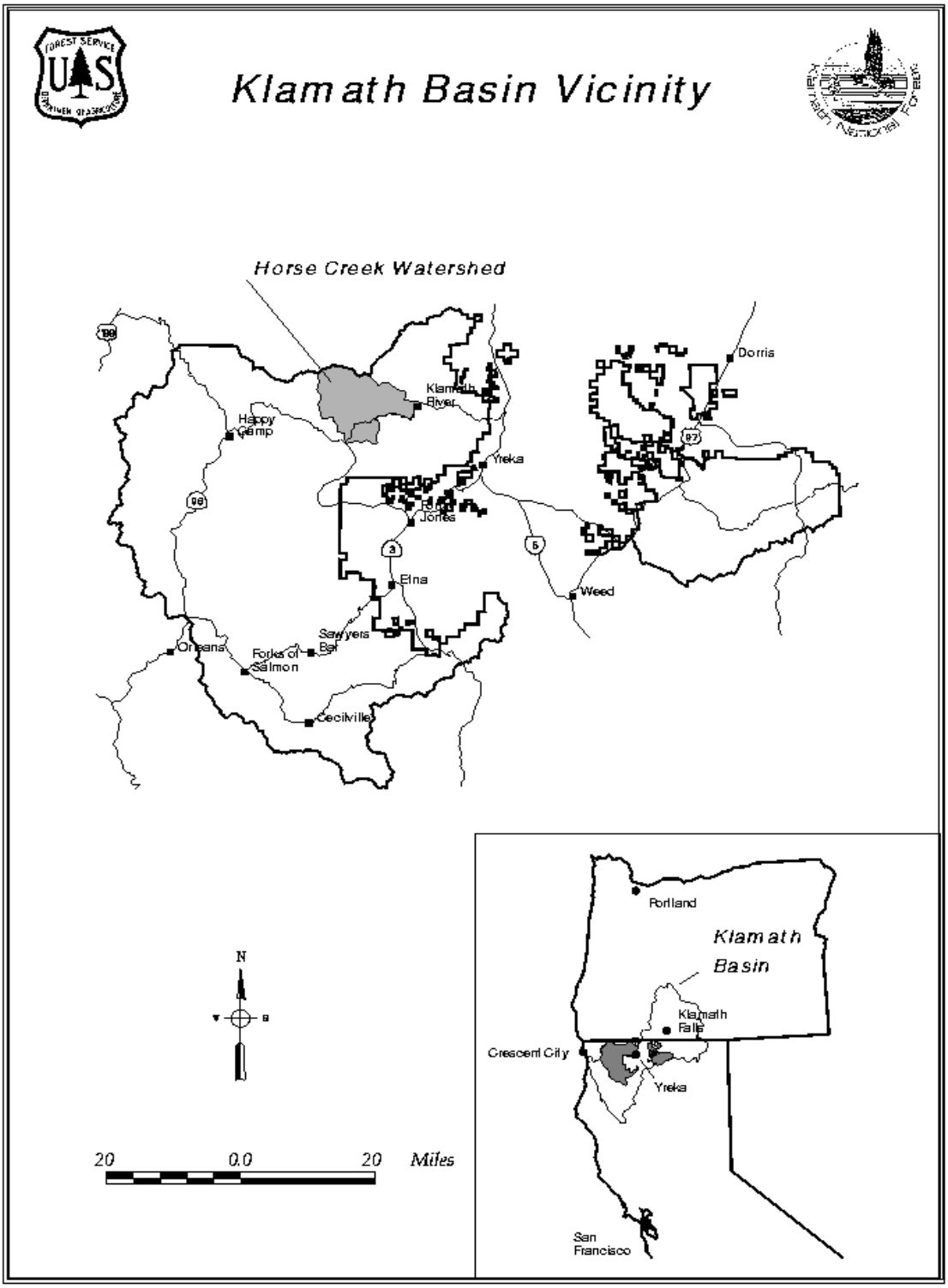
Data and information used in this analysis have come from several sources. The set of Klamath National Forest Planning Map Layers, updated as appropriate, and additional map layers were the source for the following geographic information system (GIS) layers which were used during the process; **Hydrology** (with analysis area and sub-watersheds delineated and watercourses delineated to approximate the extent of annual scour), **Geology Layer** (with rock types and geomorphic terranes), **Digital Elevation Data Layer**, **Soils and Existing Vegetation Layer**, **Fire Layer** (includes past fire perimeters, starts, and intensity), **Wildlife Layer** (includes critical and suitable habitat), **Land Allocations** (from *Forest Plan*), **Transportation Layer, Visual Quality Layers** (with existing visual conditions and visual quality objectives)**,** and **Recreation Layer**. From these data layers, information such as fire hazard, existing vegetation communities, and short term timber program analysis were derived.

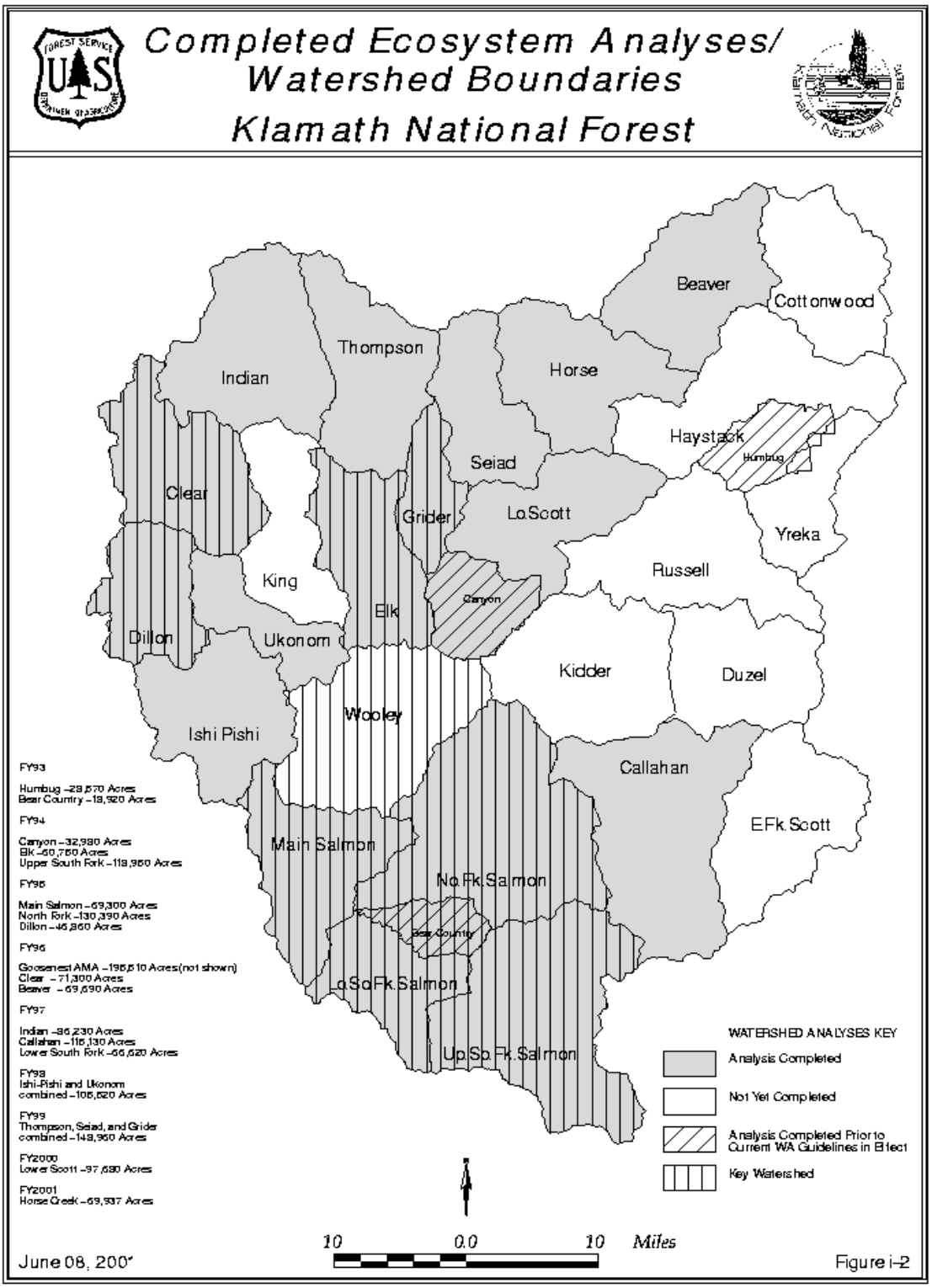
Additional non-GIS sources of information were incorporated into the analysis. Stream surveys and fisheries habitat typing data were available for some streams within the analysis area. Other information was obtained from Forest planning documents, aerial photo interpretation, County museum records, published reports and papers, and personal communications.

## An Iterative Process

Ecosystem analysis is an ongoing process. This initial analysis report will serve as a foundation onto which new information or interpretation may be added.

Figure i-1


Klamath Basin Vicinity
Horse Creek Watershed
Dorris
Klamath River
Happy Camp
Yreka
Jones
Etna
Weed
Sawyers Bar
Orleans
Forks of Salmon
Cecilville
N
20
0.0
20
Miles
Portland
Klamath Basin
Klamath Falls
Crescent City
Yreka
San Francisco


Completed Ecosystem Analyses/
Watershed Boundaries
Klamath National Forest
Beaver
Cottonwood
Thompson
Indian
Horse
Haystack
Humbug
Seiad
Clear
Grider
Lo.Scott
Yreka
King
Russell
Canyon
Elk
Dillon
Ukonom
Kidder
Duzel
Wooley
Ishi Pishi
Callahan
E.Fk.Scott
Main Salmon
No.Fk.Salmon
Bear Country
Lo.So.Fk.Salmon
Up.So.Fk.Salmon
FY93
Humbug –28,670 Acres
Bear Country –18,920 Acres
FY94
Canyon –32,980 Acres
Elk –50,750 Acres
Upper South Fork –118,950 Acres
FY95
Main Salmon –69,300 Acres
North Fork –130,390 Acres
Dillon –46,860 Acres
FY96
Goosenest AMA –195,510 Acres(not shown)
Clear – 71,300 Acres
Beaver – 69,690 Acres
FY97
Indian –86,230 Acres
Callahan –116,130 Acres
Lower South Fork –66,620 Acres
FY98
Ishi-Pishi and Ukonom
combined –105,520 Acres
FY99
Thompson, Seiad, and Grider
combined –148,950 Acres
FY2000
Lower Scott –97,680 Acres
FY2001
Horse Creek –69,937 Acres
WATERSHED ANALYSES KEY
Analysis Completed
Not Yet Completed
Analysis Completed Prior to Current WA Guidelines in Effect
Key Watershed
10 0.0 10 Miles
June 08, 200*
Figure i–2